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USSR Report

ECONOMIC AFFAIRS



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EFFICIENCY OF CAPITAL INVESTMENT IN SOCIAL TERMS ANALYZED

Moscow.VOPROSY EKONOMIKI in Russian No 5, May 79 pp 49-57

[Article by U. Baymurotov, Alma Ata]

[Text] In the context of advanced socialism capital investments in the sphere of material production are aimed both at achieving dynamic economic growth and also at immediate performance of society's social tasks. This advances the social aspect of the efficiency of capital investments¹ to the foreground.

In the various stages of development of the investment process in the USSR capital investments in material production have as a rule been distinguished by the rather restricted list of tasks to be performed. Most frequently they had to do with building up production capacities and raising the technical level of production.

Multipurpose capital investments and comprehensive long-range investment programs which accomplish integrated performance of socioeconomic tasks at various levels are inherent in the economy of mature socialism. In the economics literature a number of authors have rightly noted the advantages of comprehensive programs.²

Greater emphasis on the social orientation of capital investments presupposes a larger share of outlays for workplace health and safety, conservation of natural resources and environmental protection, as well as to satisfy the nonmaterial needs of the public.

A number of circumstances have made it an urgent matter to take into account the social consequences of capital investments. They are the growing scale and high pace of the investment process, the increase in the relative share of outlays committed to performance of the CPSU social program and to creation of the prerequisites for well-rounded development of the individual, and the necessity of enhancing the role of social factors in economic growth and in raising the efficiency of social production. Moreover, we should also note that in the past the social consequences of industrial development and of their effect on economic efficiency were underestimated and scientific

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energies were not sufficiently concentrated on the theoretical problems of determining the efficiency in social terms of capital investments, new technology and scientific research. That is how evaluation came to be based so widely on exclusively economic criteria.

The theory of the efficiency of capital investments and of social production is faced with the need to study not only economic aspects, but also social aspects. As noted by T. Khachaturov, member of the academy: "We have a number of very important problems yet to solve, above all the socioeconomic efficiency of capital investments, or the efficiency of investments in the nonproductive sphere."³

In the broad sense the social efficiency of capital investments is manifested in the development of the socialist way of life and in the gradual evening out of regional, ethnic and other differences. In the narrow sense it means solving the most urgent socioeconomic problems. Normally capital investments are not required by all social transformations. Three consolidated groups of social benefits should accordingly be distinguished:

a) improvement of sanitary-hygiene and esthetic conditions of the workplace, making work easier (reduction or elimination of heavy manual labor, reduction of the monotony and pace of work, and reduction of nighttime work), workplace safety, elimination or reduction of accidents and injuries, and regulating manufacturing processes without man's direct intervention;

b) alteration of the character and content of work, raising the level of worker education and skill, creative job enrichment, improving the level of job satisfaction, transformation of farm work into a variety of industrial work, guaranteeing choice of occupation, type of work and job according to aptitude and inclination, abilities and vocational training, and internationalization of labor;

c) the social impact resulting from protection and improvement of the environment: achievement of clean air and water, prevention of soil pollution, reproduction of natural resources, preservation of unique natural complexes, farm and forest land, and flora and fauna, and creation of proper conditions for people's rest and recreation. We should also include here the benefit from prevention or reduction of the destructive effect of the elements on man and his environment.

A separate group is made up of the social benefits manifested in the process of consumption proper and achieved by improvement of the use characteristics of products, improvement of the pattern of services, and the formation of new needs.

In accordance with the theory of efficiency, social criteria should be taken into account when variants of capital investments and of new technology are being evaluated. This proposal is unquestionably correct in its general form, but its implementation does not seem altogether correct to us.

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The normative approach is taken to evaluating the efficiency of capital investments at the present time. Essentially this means that capital investments are regarded as a means of achieving goals set in advance with minimum expenditures of social labor. All alternatives of capital investments are assumed to be equivalent or comparable, and the task comes down to finding the best variant that minimizes the costs to society. The normative approach greatly simplifies the methodology of economic calculations, but at the same time it does not improve the soundness of the decisions made, but rather detracts from it.

First of all, it is not always technically feasible to achieve full equality of benefits for the variants being compared, so that this premise must be regarded with great caution. Second, it is also unacceptable from the economic standpoint, since it is assumed that the variants being evaluated will bring about social goals given in advance and sometimes insufficiently substantiated, without taking into account the volume of capital investments. Third, the normative approach does not guarantee full utilization of the achievements of scientific-technical progress materialized to the greatest degree in some variant of capital investments. In this approach only by accident can the objective be in line with the maximum parameters of a specific type of new engineering and technology.

The variants must be made comparable in the volume of output, list of products, product quality and the time factor, and also with respect to certain especially urgent social tasks, which are defined as a function of sectoral and regional peculiarities: for example, with respect to achievement of standards concerning working conditions and maximum permissible concentrations of pollutants in emissions and effluents.

In future work to develop the theory of efficiency, then, it will be wise to provide for an organic combination of the normative approach with the exploratory approach. If the normative approach is needed to ensure the growth of capacities for given volumes of output, product quality and range of products, the exploratory method is needed to substantiate the social goals made possible by scientific-technical progress. Combining these two approaches will make it possible to utilize feedback between the possible results and the setting of goals, as well as to optimize the degree of their attainment.

In the normative-and-exploratory approach the optimum variant of capital investments should be characterized by a given level of satisfaction of society's needs for given material goods, by specific social standards and by a maximum of other beneficial social results, while adequate economic efficiency of capital investments is maintained.

The most important task in efficiency theory is to make the transition from qualitative analysis of social changes to their quantitative evaluation. This is dictated by the growing importance of social factors in economic growth, by the need to mitigate and altogether eliminate certain adverse consequences of scientific-technical progress, and by the evolution of social benefit into something that is planned.⁴

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The problem of quantitative evaluation of social consequences has two aspects: measurement of scale and economic evaluation. At the present time many forms of social effect are determined quantitatively on an individual basis (reduction of noise level, vibration, dust concentration, etc.). But not enough attention is being paid to development of methods of evaluating the sum total of social benefits. The reason is the complexity of this scientific problem. Since qualitatively different social results and needs are not comparable with one another and irreducible to one another, it is, of course, impossible to correlate them in absolute terms. But relative indicators of various social benefits are altogether subject to comparison and even to summation under proper conditions. The computations involved are rather simple and include the following basic stages. First we must establish the expected level of each social result to be quantitatively determined. By setting the maximum possible level at 100 percent, we can compute the level of its attainment.

For social results which cannot be determined quantitatively (job satisfaction, realization of the intellectual and physical abilities of the workers, the worker's attitude toward his work, etc.), the range of which is comparatively narrow, it is possible to make an expert evaluation of the level of their attainment on a discrete scale: full attainment of the result--1; partial attainment of the result--0.5; result not attained--0. As experience is acquired in evaluating this group of social benefits, the scale of their measurement should be refined, becoming more detailed and better substantiated.

A single methodological principle for determining the reference point is adhered to in both these cases. Regardless of the method of recording a particular social benefit, one does not take as the basis of comparison the existing state of production, but the maximum state of production desirable in terms of social parameters and are given specific conditions. It is obvious that with this method, which allows for comparisons within sectors and industries, among sectors and industries and other comparisons, the social indicators of real designs will be found between the actual and the maximum levels. The closer they come to the upper limit, the higher the social efficiency of capital investments.

The degree of improvement (w_i) of any social parameter i (quantitatively determinable or not determinable) for an enterprise or facility as a whole should be determined so as to take into account the depth (w_{ij}) and breadth of the change (d_j):

$$w_i = \sum_{j=1}^m w_{ij} d_j,$$

in which w_{ij} --degree of attainment of the i -th social benefit for the j -th worker occupation, fractions of unity; d_j --relative share of workers in the j -th occupation in the total number of production personnel proper, fractions

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of unity; m--number of occupations for which the social parameter i is being improved.

As an example we will examine two variants for construction of a mining and ore dressing combine which differ in the level of attainment of social parameters. The table below gives the principal socioeconomic indicators of the variants being evaluated (hypothetical figures):

Table 1

<u>Indicators</u>	<u>Unit of Measurement</u>	<u>Variants</u>	
		<u>I</u>	<u>II</u>
Commodity output	Thousands of rubles	15,000	15,000
Annual current expenditures, total	"	10,200	9,870
Breakdown:			
For technological progress	"	9,150	9,150
For reduction of gas content of the air	"	30	30
For reduction of the dust content of the air	"	20	20
For water pollution control	"	520	520
For soil pollution control	"	480	150
Profit	"	4,800	5,130
Work force, total	Persons	970	970
Breakdown:			
In cyanidation shops	"	20	20
In crushing shops	"	10	10
Degree of reduction of the gas concentration of the work area of cyanidation shops	Fractions of unity	1.0	1.0
Degree of reduction of the dust concentration of the work area of crushing shops	"	1.0	1.0
Degree of reduction of stream pollution	"	1.0	0.5
Degree of reduction of soil pollution	"	1.0	0.5
Level of improvement of transport conditions	"	0.5	0.5
Capital investments, total	Thousands of rubles	37,200	34,200
Breakdown:			
For the technological process	"	31,200	31,200
For reduction of the gas concentration of the air	"	100	100
For reduction of the dust concentration of the air	"	80	80
For water pollution control	"	1,800	1,800
For soil pollution control	"	4,020	1,020
Efficiency coefficient of capital investments	--	0.13	0.15

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As we see from the table, these variants of the construction project provide for attainment of the following social results: reduction of the dust concentration and gas concentration of the air, complete elimination of pollution of streams and to some extent of the soil, and also improvement of transportation conditions. The table gives these social results in terms of degree of reduction. In the case of the social benefit referred to as "improvement of transportation conditions," which is among those not determinable quantitatively, the degree of attainment of the maximum level desired was determined by expert evaluation. The figures on the breadth of the change (d_j) for the first two parameters, determined from the data in the table, are respectively 0.02, (20/970), and 0.01, (10/970). In the other cases the value of this indicator was taken at 1.0. The magnitude of improvement of these social parameters for the first variant, calculated according to the formula given above, are as follows: reduction of gas concentration of the air $w_1 = 0.02$; reduction of the dust concentration of the air $w_2 = 0.01$; reduction of stream pollution $w_3 = 1.0$; reduction of soil pollution $w_4 = 1.0$; improvement of transportation conditions $w_5 = 0.5$. For the second variant, which differs from the first only in the lower degree of reduction of soil pollution, the values of w_1 will be the same with the exception of w_4 , which is 0.5.

The ranking of social problems and goals, which is a separate phase in evaluating the efficiency of capital investments, has paramount importance to devising a comprehensive standard of measurement of the social benefits of capital investments. The objective necessity of this ranking is also dictated by the fact that society's capabilities in terms of resources are limited in any particular time interval. A concrete determination must be made of the most important social problems in the context of all the sectoral and regional peculiarities of the given industry's operation. For example, for coal mines the social task of first priority might be to eliminate dust concentration at longwall working faces; for textile enterprises it might be elimination of noise and vibration, and so on. Even related industries located in different regions of the country have their own specific problems, so that it is unacceptable as a method to adopt a standard ranking for them.

Well-known methods of expert evaluation (survey, questionnaire, the Delphi method, etc.) are quite suitable for ranking social goals and tasks from the standpoint of their urgency.

Yet to improve accuracy and reduce the time required to determine the efficiency of capital investments, the more proper way of establishing weighting coefficients to adjust for the significance of social results using some mathematical model than by expert evaluation. A specific expression of a mathematical function assigning weights to the ranking criteria and meeting a sufficiently general system of conditions has been argued in the specialized literature⁵ and is written as follows

$$q'_i = \frac{i}{2^{i-1}}.$$

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This formula is used to determine the absolute weights, and this one for determining the relative weights:

$$q_i = \frac{q'_i}{\sum_{i=1}^n q'_i} < 1,$$

in which i --the social benefit's number in the ranked series; n --the total number of social benefits.

The sum total of relative weights is evaluated by ($\sum_{i=1}^n q_i = 1$). Since they are a function of such factors as a change in the content and priority assessments of social problems, the weights should be calculated in every specific case.

Determination of the degree of attainment of social results, ranking and establishment of relative importance provide the indispensable procedural prerequisites for synthesis of the various social benefits. The specific expression for summation of these benefits might be represented as follows:

$$w = \sum_{i=1}^n w_i q_i,$$

in which w_i --average degree of attainment of the set of social results (in percentage).

For the enterprise considered above the social results might be ranked as follows (in descending order of importance along with the respective values of the absolute and relative weights).

Table 2

	<u>Rank- ing</u>	<u>Absolute Weight</u>	<u>Relative Weight</u>
Reduction of gas concentration	1	1.00	0.28
Reduction of dust concentration	2	1.00	0.28
Reduction of stream pollution	3	0.75	0.21
Reduction of soil pollution	4	0.50	0.14
Improvement of transportation conditions	5	0.30	0.09
For all parameters		3.55	1.00

Summing up the social results so as to take the weights into account, we get: in the first variant $w = 0.28 \times 0.02 + 0.28 \times 0.01 + 0.21 \times 1.0 + 0.14 \times 1.0 + 0.09 \times 0.5 = 0.40$; in the second variant $w = 0.28 \times 0.02 + 0.28 \times 0.01 + 0.21 \times 1.0 + 0.14 \times 0.5 + 0.09 \times 0.5 = 0.33$.

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Thus the first variant for construction of the mining and ore dressing combine, which has the maximum value of w , surpasses the second variant by a factor of 1.2 with respect to the set of social results.

Substantiation of the criterion has great importance to computing the socioeconomic efficiency of capital investments; here the theoretical proposition taken as the point of departure is recognition of the primacy of the social goals of social production over the economic goals. From our standpoint attention should be paid to the degree of attainment of the set of social results examined above. The maximum degree of attainment of a set of social benefits assumes the significance of a criterion with the following constraints: first, the volume of output, product quality and product mix must correspond precisely to those given; second, the various social parameters for which standards are set must unflinchingly be improved to the level of standards where further improvement of any one parameter is impossible without detracting from some other parameter; third, the coefficient of the economic efficiency of capital investments must be at least as high as the established standard.

In essence the criterion proposed has a socioeconomic content: it reflects the ultimate goals of capital investments, which are exclusively social, and it is maximized under constraints that are both social (the first and second) and also economic in nature (the first and third). The very socioeconomic efficiency of capital investments is treated as a synthesis of the social and economic efficiency, and not as their summation.

Evaluation of the optimum variant of capital investments with respect to the maximum of the criterion w guarantees that use of capital investments in which each goal and consequently the sum of the goals is attained to the maximum, while the coefficient of efficiency of capital investments is at least as high as the established standard. The different variants can be compared and evaluated only when a prior determination has been made within them of the optimum level of attainment of social results, which are different from variant to variant, with the exception of certain mandatory forms of social benefit. Selection of the best variant of capital investments from the socioeconomic standpoint is unambiguous and natural; it eliminates the problem artificially set by certain researchers of substantiating a universal value equivalent of the social benefit.

In the light of this, the second variant in our example, for which the economic coefficient of the efficiency of capital investments is at the level of the established standard, is the better one. The first variant, though it provides for a higher level of attainment of social results, is unacceptable since the coefficient of efficiency is below the established standard (see Table 1).

The economic "price" of the social benefits, taken together, in this method is not established on the basis of universal value equivalents adopted in advance, but is derived from the specific indicators of each variant of capital investments being compared.

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Frequently by the economic "price" of the social result is meant the sum total of outlays to achieve it. In our view this is not altogether correct. There is no question that the outlays show what it costs society to produce the desired social benefit. But in and of themselves they do not comprise the economic "price," since the latter cannot be equated with the concept of outlays. The economic "price" of the social benefit is a portion of the direct economic benefit transformed into a useful social result and is a deduction from it. It should be defined as the difference between the total economic benefit possible without the social benefit and the total economic benefit obtained along with the social benefit. If the coefficients of the economic efficiency of capital investments K , calculated under conditions of stability and alteration of social factors, are respectively denoted as E_0 and E , then the economic "price" of the set of social benefits will be a product: $(E_0 - E)K$.

The coefficients of efficiency of capital investments E_0 and E are calculated in accordance with the well-known recommendations of the Standard Procedure for Determining Efficiency of Capital Investments as the ratio of profit to capital investments. But clarification is needed for calculation of E_0 . To obtain the initial data we must subtract from the total volume of capital investments of the variants being evaluated the outlays for social measures and increase the profit by the amount of the current costs related to achievement of social results. We must remark in this connection that in project planning specific calculations must be made of capital investments and current costs for social measures. This kind of differentiation of costs presents no real difficulty.

In our example the coefficient of efficiency of capital investments for a hypothetical variant, determined from the figures in Table 1, is 0.19. Then the economic "price" will amount to 2,232,000 rubles $[(0.19 - 0.13) \times 37.2 \text{ million rubles}]$ for the first variant and 1,368,000 rubles $[(0.19 - 0.15) \times 34.2 \text{ million rubles}]$ for the second variant.

We note that the rise in the economic "price" of social benefits is very contradictory. On the one hand, the more progressive the variant of capital investments in technical terms, the higher the E_0 , and consequently the larger the portion of the possible specific economic benefit $(E_0 - E)$ can be transformed into social benefits. The sum total of useful social results can also be correspondingly larger, and they will be "more expensive." But this "higher cost" is justified. For that reason present-day scientific-technical achievements should be utilized to the maximum in shaping the technical foundation of capital investments.

In principle social benefits can be obtained even at a low efficiency coefficient E , which is an indicator of a low scientific-technical level in project planning. Conversely, when other factors (E_0 and K) are constant, the higher the value of E , the smaller the yield of social benefits. On the other hand, the higher the total volume of capital investments, including those for social purposes, the larger the sum total of social benefits can

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be. But this method is limited by the size of the accumulation fund and is less efficient than the first one.

The example examined above illustrates these propositions. The first variant, which provides for social benefits, has an efficiency coefficient below the established standard ($E = 0.13$). The superiority of this variant over the second variant by a factor of 1.2 with respect to the criterion of social efficiency is achieved by virtue of a larger volume of capital investments and a lower coefficient of economic efficiency (see Table 1).

To justify the efficiency of capital investments we must make a comprehensive accounting of the national-economic benefit from social changes. Many social benefits can be expressed in value terms. At the same time, it is impossible, say, to appropriately express in rubles the social consequences of internationalization of the economy, the strengthening of the spirit of comradeship and friendship within collectives, increasing the free time of the workers, strengthening the health of the population, and so on. But social changes which can be expressed at least partially in value terms should be evaluated in economic terms. This would be in line with the interests of optimum use of capital investments.

There is a definite interest in studying the structural components of the national-economic benefit and the character of their mutual influence. Particular attention is being paid to the components of that benefit. One component is the impact of material factors of production obtained in the operation of facilities, in the consumption of their product, and also in the national economy as a whole. A second component is the national-economic benefit from the effect of the "human" factor on production taking place in those same spheres. It is common practice to look upon the effect of the first kind as a direct economic benefit, and on the benefit of the second kind as the social benefit, which is ultimately transformed into an economic benefit. We cannot fail to recognize the relative nature of the boundary lines separating those portions of the total benefit, since the different benefit-creating factors which are the basis of the economic and social benefit are closely interrelated with one another and frequently operate synchronously, in unity. As a rule a change of the material factors of production necessitate the change in the "human" factor as well, transforming the conditions and character of the labor of the workers. Consequently, a social benefit almost always accompanies the economic benefit. Moreover, capital investments from the outset bring about both types of benefit simultaneously, and then each of them increases by virtue of the stronger mutual influence of the factors bringing about the benefits. The economic benefit stimulates the effect of the "human" factor, and the social benefit is conducive to efficient utilization of the material factors of production. And this proceeds until the potential for growth of economic and social efficiency is exhausted. The effect of feedback which unfolds in time as a process, rather than a one-time act, is manifested in this.

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The mutual transformation of the economic and social benefits does not occur directly, but through stimulation of the factors which bring about the benefits. We must note that the relation between the economic and social benefits is not a functional relation, but one based on probability. This applies more to the effect of social changes on the economic benefit than to the impact of economic consequences on social changes. Thus the varied social results of capital investments can be represented in general form and quantitatively evaluated through the level of attainment of their desired levels.

FOOTNOTES

1. The reference is to evaluation of social results of capital investments in the production sphere.
2. See T. S. Khachaturov, "Sovetskaya ekonomika na sovremennom etape" [The Soviet Economy in the Present Stage], Izdatel'stvo "Mysl'," 1975; V. P. Krasovskiy, "Long-Range Investment Programs as an Important Way of Raising the Efficiency of Capital Investments," in the book "Dolgosrochnyye programmy kapital'nykh vlozheniy" [Long-Range Programs of Capital Investments], Izdatel'stvo "Ekonomika," 1974.
3. VOPROSY EKONOMIKI, No 11, 1977, p 79.
4. See "Ekonomicheskiye problemy nauchno-tekhnicheskoy revolyutsii pri sotsializme" [Economic Problems of the Scientific-Technical Revolution Under Socialism], Izdatel'stvo "Ekonomika," 1975, pp 12, 144.
5. See V. G. Gmoshinskiy and G. I. Fliorent, "Teoreticheskiye osnovy inzhenernogo prognozirovaniya" [Theoretical Foundations of Engineering Forecasting], Izdatel'stvo "Nauka," 1973, pp 88-89.

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RATE OF EFFICIENCY OF CAPITAL INVESTMENTS

Moscow VOPROSY EKONOMIKI in Russian No 5, May 79 pp 122-128

[Article by N. Miroshnikov, Zernograd, Rostovskaya Oblast]

[Text] Raising the efficiency of social production presupposes improved use of capital investments, whose volume is increasing 24-26 percent in the years of the 10th Five-Year Plan and amounts to approximately 625 billion rubles. It is not only the tremendous volume of capital investments and their high growth rates that make it so important to increase their efficiency in the present stage, but also the fact that they "play a particular role in the process of reproduction, determining the long-range development of the entire national economy."¹

These circumstances are indicative of the need for "continuing research in the field of the theory and methodology of the efficiency of capital investments."² This research is becoming more relevant because the basic theoretical and methodological aspects of this problem have still not been definitively dealt with and are still a matter for scholarly debates. This specifically applies to the question of the economic content of the standard coefficient of efficiency of capital investments E_H , as well as to the formula of imputed cost ($C + E_H \cdot K = \text{minimum}$). "A number of economists," notes M. Vilenskiy, "including advocates of the method of imputed costs, feel that imputed costs are only a calculated quantity devoid of real economic content, while evaluation of variants of new technology in terms of the saving on imputed costs is a procedure based on calculation."³

But in our view one cannot concur in the opinion of those economists, since it ignores above all the many years of experience in using the indicators in question: "The standard rate of efficiency of capital investments has long been used--since the late twenties--by many project planners in calculations of the efficiency of design variants."⁴ The legitimacy of applying standard rates of efficiency in project planning calculations received official recognition in 1958 at the All-Union Scientific-Technical Conference on Problems of Determining Economic Efficiency of Capital Investments and of New Technology in the USSR National Economy. This was reflected in the relevant Standard Method, which has already gone through two editions. The lengthy

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period of its validity indicates that the methods recommended in it do not apparently contradict the practice in the national economy. It is therefore no accident that "its principles are widely used in project planning. Now one no longer finds a design or scheme which has not been economically justified on the basis of the principles contained in that document."⁵

Of course, the circumstances we have noted still cannot serve in and of themselves as evidence that the standard rate of efficiency and imputed costs have real economic content. On the contrary, they indicate the need for a strictly scientific substantiation of these indicators so as to eliminate a certain discrepancy between the theory of the question and its practical solution. For that reason we cannot fail to agree with K. Volkov, who writes: "Any standard must be correctly chosen and applied only when there is a straightforward economic interpretation of its nature, which unfortunately economic theory has so far not supplied in the case of the rate of efficiency."⁶

Yet the fact that the research has not been completed cannot serve as the basis for denying the legitimacy of applying the method of imputed costs in practical calculations of efficiency, a denial that can still be encountered fairly frequently in our economics literature.⁷ We find more logic in the position taken by those authors who feel that "imputed costs ... are a real economic category,"⁸ that they are "not a technical indicator, but an economic indicator."⁹ But in justifying these propositions, which in principle are correct, there is still one difficulty which has not been finally overcome; it has to do with clarifying the meaning of the product $E_H \cdot K$ --which is a component of the imputed costs. M. Vilenskiy rightly states that " $E_H \cdot K$ figures as a component of national-economic costs."¹⁰ But we still cannot draw a definite conclusion from this concerning precisely which expenditures of social labor $E_H \cdot K$ expresses. More detailed evidence of this proposition can be found in the writings of L. Vaag. "In our opinion imputed costs are an indicator," the author states, "reflecting the actual full current outlays of society for production of the product. One of its components--the production cost C --expresses current costs at the given enterprise, and the other-- $E_H \cdot K$ --the rise of costs at other enterprises of society (in production of their products) because the capital investments K are being used not at those enterprises, but at the one under consideration. So this increase in current costs at other enterprises should in principle be charged to the output of the given enterprise, which is done by taking $E_H \cdot K$ into account."¹¹

There is every reason to emphasize two circumstances here. First of all, the product $E_H \cdot K$ expresses real expenditures of social labor to produce a specific output. Second, an organic correlation resulting from the limited nature of the resources of the national economy--in this case capital investments--exists between expenditures of labor required for production of particular products. As a matter of fact, since the capital investments K are being used in this particular production section, less capital-intensive variants with higher current production costs for the respective product

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will be chosen at other enterprises. But a certain contradiction arises when the economic meaning of $E_H \cdot K$ is treated this way. If the product $E_H \cdot K$ is regarded as an expression of current expenditures of social labor, then it turns out that on the scale of the entire national economy these expenditures are recorded twice--within the imputed costs for production of the given product and as a part of the production cost of "other enterprises of society." In other words, a certain part of the current costs throughout the national economy are seemingly incurred twice. As a matter of fact, it seems to us, in his line of argument L. Vaag is correctly revealing only one of the properties of expenditures of labor expressed by the product $E_H \cdot K$, namely: they are equal in their magnitude to the rise of current costs (production cost) "at other enterprises of society (in production of their product) because the capital investments K are being used not at those enterprises, but at the one under consideration." But still we cannot automatically conclude therefrom that $E_H \cdot K$ actually constitutes the current costs of society for production of the given output. In our opinion the economic nature of the expenditures of social labor expressed by the element $E_H \cdot K$ is different.

For purposes of justifying this assertion we submit a system of indicators (K_i, C_i) characterizing the variants of the project design in the following form:

$$\Delta K_i = K_i - K_1 > 0, \Delta C_i = C_i - C_1 > 0, i = 2, 3, \dots, n.$$

Since it is a question of selecting the optimum variant, then that variant requiring the minimum total of capital investments K_1 will at the very least have to be carried out to produce the planned volume of output. After all, it is not a question of whether to produce the given product or not, but of which method to use in its production. So essentially the problem comes down to determining the specific size of additional investments it is advisable to use at a given production facility. This can be done by comparing the labor saving achieved thanks to the additional capital investments at the project under consideration (ΔC_1) and at other sections of the national economy. To compare these quantities we take the difference $J_1 = \Delta C_1 - E_H \cdot \Delta K_1$, in which the product $E_H \cdot \Delta K_1$, in accordance with the conception of L. Vaag considered above, specifically expresses the saving on current expenditures of labor at other sections of the national economy, which can be obtained if the given product is produced according to the variant (K_1, C_1), and the resulting use of additional investments at other production facilities. In solving this problem we can imagine several cases:

1. $J_1 < 0$. This means that use of the capital investment ΔK_1 is inadvisable in production of the given product, since at the other sections of the national economy they would yield a larger economic benefit. If $J_1 < 0$ for all the variants of additional one-time outlays, then the program for production of this product will be carried out according to the variant with the minimum necessary size of investments K_1 .

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2. $J_1 = 0$. In this case it is a matter of indifference from the standpoint of the saving on social labor whether ΔK_1 is committed to this industry or another industry.

3. $J_1 > 0$. It is clear that in this case the additional investment ΔK_1 should be used at the project under consideration. If $J_1 > 0$ for all variants, then the most efficient of them is that for which the following relationship holds

$$\Delta C_1 - E_H \cdot \Delta K_1 = \max. \quad (1)$$

This product will be produced in the variant the size of whose capital investments is $K_1 + \Delta K_1$ and whose production cost is $C_1 - \Delta C_1$.

Formula (1) can also be derived with elementary mathematical procedures. It is well known that a condition for introduction into production of the most capital-intensive variant (K_1, C_1) as compared to the variant (K_i, C_i) is fulfillment of the relationship

$$\frac{C_i - C_1}{K_i - K_1} \geq E_H. \quad (2)$$

Since $K_1 - K_i > 0$, then $C_1 - C_i \geq E_H \cdot (K_1 - K_i)$, $\Delta C_1 - E_H \cdot \Delta K_1 \geq 0$. But that variant of additional investments for which $\Delta C_1 - E_H \cdot \Delta K_1 = \max$ will be the most efficient.

So, formula (1) makes it possible to compare the benefit from using a specified amount of additional capital investments at a particular facility and in other sections of the national economy. The coefficient E_H figures as a basis of that comparison. It is this coefficient which performs the role of that measure of the efficiency of capital investments used as the basis for selecting the variants to be used, those which provide for maximum growth of the productivity of social labor by reducing expenditures of labor for production of all output to a minimum. In accordance with that function, the indicator E_H is nothing other than the rate of efficiency of capital investments. Indeed E_H has for a long time been used in that role in economic practice and has been extensively treated in the economics literature. Restricting ourselves to this treatment of that indicator, we understand the meaning of selection of variants with respect to formulas (1) and (2): a comparison is being made of the economic benefit from additional capital investments at each particular production facility with the proportion of that benefit from the standpoint of the national economy. But everything becomes much more complicated if we move from formulas (1) and (2) to the formula of imputed costs $C_1 + E_H \cdot K_1 = \min$. We should note at once that from the standpoint of calculations of the comparative efficiency of variants these formulas are equivalent to the following:

$$\Delta C_1 - E_H \cdot \Delta K_1 = C_1 - C_i - E_H (K_1 - K_i) = (C_1 + E_H \cdot K_1) - (C_i + E_H \cdot K_i) = \max.$$

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Since the sum $C_i + E_H \cdot K_i = \text{constant}$ for the given set of variants, the latter expression will have maximum value for that variant for which $C_i + E_H \cdot K_i = \text{min.}$

If the economic meaning of conditions (1) and (2) is simple and comprehensible, if we regard E_H as the rate of the benefit in the form of a saving on expenditures of labor, we cannot explain that meaning in the case of the sum $C_i + E_H \cdot K_i$. This circumstance has long been noted in our literature.

"But does the sum $C_i + K_{ef} \cdot K_i \dots$ have any sort of real economic content? The first term C_i expresses the cost of the product, i.e., a definite economic category whose magnitude may vary only as the result of a change in the productivity of social labor. The second addend has an economic content of a different kind and expresses the saving on expenditures of social labor, i.e., it is the direct opposite of labor expenditures. But after all quantitatively different categories cannot be added together."¹² (Italics mine--N. M.) It is difficult to object to this line of argument. In our view a contradiction arises which cannot be resolved: the legitimacy of using the method of imputed costs for selection of the most effective variants of capital investments has been convincingly proven in the mathematical domain, but it would seem impossible to clarify the economic meaning. This is the circumstance that is the reason why certain economists either reject this method altogether or look upon it only as a computational procedure.

It is obviously impossible to resolve this contradiction if we restrict ourselves to treatment of the indicator E_H as an economic benefit (the allowable minimum of efficiency) which has been known for a long time. A way out can be found only if E_H is regarded as an indicator of expenditures of social labor. Such attempts have been made in our literature, as we mentioned above. There is every justification for posing the problem in this way. As a matter of fact, by proclaiming the indicator E_H to be the national-economic rate of efficiency of capital investments, we are failing to answer the question: And on what basis does it perform the role of such a rate? More precisely, what is the objective economic content of this indicator, what is it that makes it possible to use it as a social standard?

In our opinion the original economic content of this category is that it expresses expenditures of surplus labor. Let us suppose that at a particular production facility a variant calling for additional capital investments in the amount ΔK_0 by comparison with their minimally necessary amount K_1 has been chosen in accordance with condition (1). Carrying out this variant will provide a saving on current costs amounting to ΔC_0 . Since capital investments amounting to ΔK_0 are used at the facility under consideration rather than elsewhere, at other sections of the national economy additional outlays will be correspondingly less by that amount. So current expenditures of labor to produce the output of those sections will prove to be greater by the amount $E_H \cdot \Delta K_0$. This means that the potential benefit in the amount of $E_H \cdot \Delta K_0$ from use of the additional investments ΔK_0 is not being realized, is being lost.

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What effect does this circumstance have on formation of expenditures of labor in production of the given output as a component of the social product? A saving on current expenditures of labor brings about a growth of surplus labor used by society to expand production. Since the potential benefit in the form of a saving on current expenditures of labor (the growth of surplus labor) is not realized, this in practice means larger expenditures of surplus labor of society resulting from production of the given product through application of more expensive technology. At the same time the use of the improved technology, as Marx put it, would create an additional amount of surplus labor.¹³

The difference $\Delta C_0 - E_H \cdot \Delta K_0$ compares the surplus labor obtained in society by application of a more capital-intensive technology at the given production facility (ΔC_0) and the surplus labor society expends because of the need to create more expensive technology for production of that product ($E_H \cdot \Delta K_0$). On the whole the difference $\Delta C_0 - E_H \cdot \Delta K_0$ characterizes the growth of the surplus labor society obtains to carry out expanded reproduction by applying improved technology to production. It is only this meaning that can be given to K. Marx' words to the effect that the use of machines creates surplus labor.

The economic meaning of the condition of optimality of a particular variant $\Delta C_i - E_H \cdot \Delta K_i = \max$ now becomes clear. The growth of potential surplus labor by the amount $\Delta C_i - E_H \cdot \Delta K_i$ at every production section thanks to the application of more expensive and improved technology actually brings about a growth of the national income at the scale of the entire national economy. This is in line with that criterion of the economic efficiency of social production which is now acknowledged by most economists.¹⁴ Thus E_H expresses the socially necessary expenditures of surplus labor brought about by the use of the unit of capital investments to expand production by introducing new technology. At the same time this indicator performs the role of a measure of the efficiency of additional capital investments whose attainment indicates that it is advisable to make them in order to introduce improved instruments of labor:

$$C_i - C_i \geq E_H (K_i - K_i).$$

In this case the meaning of measuring expenditures of social labor to produce every product under the conditions of limited capital investments in the form of the sum $C + E_H \cdot K$ also becomes clear. The production of every particular type of product can be regarded as a growth of the gross social product, of which it is an integral part. This means that the production of the particular product provides for a growth of the current outlays of the national economy made in the form of expenditures of a particular enterprise by the amount C and an increase in expenditures of gross surplus labor of society by the amount $E_H \cdot K$. For that reason that variant of the alternatives being compared at a particular production facility will be most efficient which brings about the smallest growth of expenditures of social labor in production of a given product:

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$$C + E_H \cdot K = \min.$$

In the socialist context production should be accomplished with minimum expenditures of social labor in accordance with the requirements of the basic economic law. Given the scarcity of capital investments, attainment of the overall minimum of expenditures of labor throughout the national economy is possible if they are measured in the form $C + E_H \cdot K$. When this measurement is made, the value of the gross surplus product is redistributed among sectors. In other words, this redistribution, resulting from the material conditions of socialist production, conforms to the requirements of the system of economic laws of socialism, which is based on the standard E_H . These circumstances make it possible to look upon the rate of efficiency E_H and the sum $C + E_H \cdot K$ as real economic categories of socialist production relations.

And the last question which was posed above: Why does the indicator E_H perform the role of a standard of the efficiency of capital investments? Introduction of more progressive technology in a particular section of the national economy necessitates additional capital investments. This circumstance gives rise to processes which are dual in nature. On the one hand, there is a saving on current expenditures (production cost) in the given section. On the other larger expenditures of surplus labor are incurred in society because of the need to make additional capital investments. This gives rise to the need for an index which would express those socially necessary expenditures of surplus labor. Then it becomes possible in every production facility to make a social evaluation of the economic efficiency of additional investments: the saving on current costs, signifying a growth of resources of surplus labor, must be greater than the expenditures of surplus labor in society resulting from the additional capital investments. This is the real economic content of formulas (1) and (2). This approach subordinates local measures taken in the economy to the attainment of the maximum saving of social labor as a whole. That is how E_H comes to have the role of a standard level of efficiency of capital investments.

FOOTNOTES

1. T. S. Khachaturov, "Results and Upcoming Problems in Determining the Efficiency of Capital Investments," "Metody i praktika opredeleniya effektivnosti kapital'nykh vlozheniy i novoy tekhniki" [Methods and Practices of Determining the Efficiency of Capital Investments and New Technology], No 25, Izdatel'stvo "Nauka," 1975, p 3.
2. Ibid., p 6.
3. M. A. Vilenskiy, "Scientific-Technical Progress--Decisive Conditions for Raising the Efficiency of Social Production," "Ekonomicheskaya effektivnost' obshchestvennogo proizvodstva v period razvitogo sotsializma" [Economic Efficiency of Social Production in the Period of Advanced Socialism], Izdatel'stvo "Nauka," 1977, p 174.

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4. V. V. Novozhilov, "Problemy izmereniya zatrat i rezul'tatov pri optimal'nom planirovani" [Problems of Measuring Costs and Benefits in Optimum Planning], Izdatel'stvo "Nauka," 1972, p 295.
5. "Metody i praktika opredeleniya effektivnosti kapital'nykh vlozheniy," No 25, p 6.
6. K. A. Volkov, "Efficiency of Social Production and Selection of Decisions in the Economy," IZVESTIYA AN SSSR. SERIYA EKONOMICHESKAYA, No 6, 1973, p 49.
7. See, for example, A. I. Kats, "Dinamicheskiy ekonomicheskiy optimum" [Dynamic Economic Optimum], Izdatel'stvo "Ekonomika," 1970, p 115; K. A. Volkov, "Effektivnost' obshchestvennogo proizvodstva i vybor khozyaystvennykh resheniy" [Efficiency of Social Production and Selection of Decisions in the Economy], p 49; A. Mitrofanov, "Calculations and Substantiation of the Efficiency of Capital Investments," PLANOVOYE KHOZYAYSTVO, No 3, 1973, p 101; O. I. Volkov, "Planovoye upravleniye nauchno-tekhnicheskimi progressom" [Planned Management of Scientific-Technical Progress], Izdatel'stvo "Nauka," 1975, p 119; A. Pan and V. Ionov, "Profitability of the Enterprise and Economic Justification of Solutions in Project Plans," PLANOVOYE KHOZYAYSTVO, No 1, 1976, p 78; etc.
8. M. A. Vilenskiy, "Ekonomicheskaya effektivnost' obshchestvennogo proizvodstva v period razvitogo sotsializma," p 174.
9. L. A. Vaag, "On Ways of Improving the Mechanism and Methods of Economic Activity," IZVESTIYA AN SSSR. SERIYA EKONOMICHESKAYA, No 6, 1976, p 43.
10. "Ekonomicheskaya effektivnost' obshchestvennogo proizvodstva v period razvitogo sotsializma," p 175.
11. IZVESTIYA AN SSSR. SERIYA EKONOMICHESKAYA, No 6, 1976, p 43.
12. A. S. Probst, "Ekonomicheskaya effektivnost' novoy tekhniki" [Economic Efficiency of New Technology], Gospolitizdat, 1960, p 68.
13. "A saving of necessary labor and creation of surplus labor," wrote Marx, "is typical of the application of machine" (K. Marx and F. Engels, "Sochineniya," Vol 46, Part I, p 358).
14. See T. Khachaturov, "Efficiency of Social Production," VOPROSY EKONOMIKI, No 6, 1975, p 132.

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ROLE, PROBLEMS OF MONETARY CIRCULATION DISCUSSED

Moscow VOPROSY EKONOMIKI in Russian No 5, May 79 pp 17-26

[Article by I. Levchuk: "Monetary Circulation and the Role of Money Under Socialism"]

[Text] The 25th CPSU Congress raised the task of the abler utilization of economic incentives and levers. Money is one of the most important such levers.

Again and again economists turn to the question of the essence and role of money under socialism. And this is natural, for the fuller utilization of money in the interests of production development and improving its efficiency presupposes a constant deepening of the corresponding research. Marxist-Leninist theory is a sound basis for such research. In each stage of economic construction, new problems arise related to the use of money, and additional knowledge is acquired. This makes it possible to strengthen the grounds for the effective use of money for the intensification and growth of the national economy.

V. I. Lenin soon after the victory of the socialist revolution wrote that "money, or more accurately, paper money" is a form of wealth and proof of the share of social wealth.¹ Money serves as a universal equivalent of commodities (although the sphere of the action of money under socialism is limited). Socialist production relationships have altered the essence and role of money, and it has ceased being a weapon of exploitation and has become a means for the planned management of the economy. In aiding economic development, money makes it possible to organize social monetary accounting and control over the production and distribution of national product, it acts as a means per se of planning production, sales and consumption (of course, along with the physical indicators), it provides an opportunity at the present stage of development to carry out material incentives for labor, and so forth.

Money carries out the designated role with the aid of prices and on the basis of the action of the economic laws of socialism, including the law of

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value. The overall development proportions of the national economy are expressed in the plans in the value indicators of the production volume, national income, capital investments, and so forth. Expenditures on production and sales are accounted for in monetary terms, and in comparison with national income they provide an opportunity to determine the level of efficiency in social production. Money, as a carrier of exchange value, will die out in the higher phase of the communist formation.

But under socialism the conditions remain for the functioning of money, and we must not overlook this. Marx wrote: "...It is impossible to eliminate money itself, while exchange value remains a social form of products. It is essential to understand this clearly in order not to set irresolvable problems for oneself and to know within what limits monetary reforms and changes in circulation can alter the production relations and the social relations based on them."² The survival of value as one of the social forms of product until the complete construction of communism necessitates the use of a monetary form of value, that is, money. We adhere to the viewpoint that precisely this explains the necessity of money and monetary circulation under socialism.

In examining the question of the essence of money, it is essential to bear in mind that socialist production relationships have given a new content to money. "In communist construction," states the CPSU Program, "it is essential to fully utilize commodity-monetary relations in accord with the new content inherent to them in the period of socialism."

As is known, in the process of historical development, gold has acquired the role of a monetary commodity. Paper money and bank notes have acted and do act as tokens of value and as tokens of gold. However it is essential to consider that the concepts of bank notes and paper money are not identical. Why the former have been brought to life by the needs of economic circulation, the latter derive from the needs of the treasury, that is, they are designed to cover state expenses. In the capitalist nations under present-day conditions the difference between them has been virtually eliminated, since bank notes are widely used to pay for state expenses.

The money circulating in our nation is bank notes; at the same time this money is tokens for gold. A number of aspects substantiate this. The monetary reform of 1922-1924 which is the basis for the present-day monetary circulation system was carried out in accord with the demands of the party. The Resolution of the 11th RKP(b) [Russian Communist Party (Bolshevik)] Congress held in March-April 1922 stated: "...Our economic and financial policy is decisively aimed at restoring the gold backing for money which is essential since gold has firmly remained the world money and since this importance of gold on the world market is inevitably expressed also in relations on the domestic market. Such a policy should in practice be expressed in a course of maintaining an untouched gold holding and developing the mining of precious metals."³

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At the same time it was established by legislation that bank notes are to be secured by gold, precious metals and other assets of the USSR State Bank. The ruble possesses a fixed gold content, and this is of practical significance as it lies at the basis for determining the foreign exchange rates.

Marx showed that the developed capitalist countries widely replace money, on the one hand, by credit operations, and on the other, by bank notes or credit money. This makes it possible to save in distribution costs, it accelerates, facilitates and simplifies payments, and so forth. But during periods of economic and monetary-credit crises, as well as during other disturbances of the capitalist economy, the system of the circulation of credit money and credit operations is disrupted. Capitalism is unable to utilize the advantages provided by the replacement of real money by credit. Under these conditions credit money as soon as it ceases being exchanged for gold loses its strength, it is devalued and is turned into paper money. Proof of this is the state of monetary circulation, the monetary chaos and the permanent inflation in the capitalist countries and the devaluation of the currencies, even those which for a long time were considered relatively stable.

"The entire history of modern industry shows," wrote Marx, "that if production within a country was organized, then the metal would be needed only to pay the difference in the balance of international trade, when its equilibrium was disrupted at a given moment."⁴ The planned organization of production under socialism and the absence of economic disturbances provide the prerequisites for the continuous functioning of credit money and credit operations which replace real money and gold. Under these conditions the possibility and necessity arise of fully utilizing the economic advantages provided by such an organization of monetary circulation. The circulation of gold is disadvantageous for a socialist economy. It would lead to an increase in distribution costs, to a complicating and slowing down of payments in the national economy, it would cause a dispersement of the gold reserves, and this, in turn, would reduce the centralized reserves of world monies which the state holds.

The credit money in our nation replaces the actual value-possessing money in circulation and thereby acts as a token of this money. The prerequisite of the normal functioning of credit money is the conformity of its nominal amount to the value of the replaced gold. Marx stressed that "credit money itself is money only to the degree that in its total nominal value it absolutely replaces real money."⁵ The amount of credit money in circulation and replacing gold is determined considering the bulk of commodities in circulation, the price level, the turnover rate of the money, the existing forms of payment, and so forth.

Bank and credit notes under socialism are not directly tied to gold in the form of a free or even limited exchange. At the same time the conformity of money to its gold content in our country is ensured by fixed retail prices for the basic consumer goods, by a stable level of wholesale prices

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and rates for industrial products and transportation services, by the balancing of the solvent demand of the population and supply, by the observing of the planned proportions of production and distribution for production and technical products, as well as by the planned formation and utilization of financial resources. All of this necessitates the constant attention by the planning bodies to improving the elaboration of the material and financial balances, to developing the production of consumer goods and services for the population, an improvement in the compiling of the income and expenditure balance of the population, and so forth.

Under socialist conditions the aggregate monetary circulation operates as a unified entity and is divided into spheres of cash and clearance circulation. This serves the unified process of socialist expanded reproduction and the socialist planned market. The planned regulation of the volume of monetary circulation is achieved by using credit. In granting credit, the sphere of either clearance or cash circulation is expanded depending upon the object of crediting and the procedure for granting the loans, and in collecting the credit, this is reduced. In the process of the use of money, it moves from one sphere to another, from a cash form into a form of book-keeping entries, and vice versa.

The intercirculation of the various forms of money shows the unity of monetary circulation. Hundreds of billions of rubles are paid out from accounts in the form of cash for paying wages to employees, monetary income for kolhoz members, pensions, scholarships, and so forth. Payments for agricultural products and payments by consumers to suppliers for production and technical goods, and payments of enterprises and organizations to trade organizations for goods sold by stores are also partially made in cash. The bulk of the money put into circulation is returned to the bank and deposited as receipts of the trade organizations, amusement enterprises, and transport, deposits of citizens (on account in savings banks and institutions of the State Bank), and so forth. The money involved both in cash and clearance circulation is used as credit resources and is employed for granting bank loans.

Seemingly the unity of monetary circulation would not be disputed. However, in recent years at times it has been asserted that in certain instances (in truth, there is no mention of the specific cases in mind), money is separated from the circulation of material goods. Such conclusions, in our view, are incorrect, as they are based on a nonexistent division of monetary circulation in which supposedly, on the one hand, money in the form of tokens of gold reflecting its value function, and on the other, not money but rather "paper."

We cannot agree with the economists who deny the monetary nature of clearance circulation. Thus, E. Andres has asserted that socialism excludes the necessity of monetary circulation in the sphere of the exchange of the means of production. In his opinion, in clearance circulation money operates solely as "accounting money," for in this sphere not money but rather goods circulate.⁶

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Clearance or noncash circulation, as was noted above, is monetary circulation in which money which is uniform for all aggregate turnover functions. However if one follows the logic of E. Andres, then noncash circulation operates also as not completely nonmonetary. It, in his opinion, is represented by accounting money in the area of serving the means of production; but in providing for the movement of commodities for the population the necessity of monetary circulation per se has still not been eliminated. Thus a portion of noncash circulation is represented as monetary circulation, and a portion is circulation of accounting units which, as E. Andres asserts, "have lost or overcome" the properties of money. In following the logic of the given assertions, obviously payments in cash and checks (authorizations) for the means of production must also be considered as nonmonetary.⁷

However, under the conditions of using commodity-monetary relations, it is impossible to eliminate the intermediary role of money for the movement of just certain individual types of commodities. In terms of the means of production money also carries out the function of a measure of value and the function of a means of payment. The monetary accumulation of enterprises, the state monetary holdings, and the funds of the loan holdings are used to create new capacity and to reconstruct and expand production. For this reason not accounting units operate in noncash circulation which serves the movement of the means of production, but rather money in the form of credit entries. Thus, if there are any delays or disruptions in the process of selling commodity or material valuables, then it is immediately clear that the economic body requires not accounting units but rather real money.

As is known, there is the rule according to which a commodity is paid for after its dispatch. But if the recipient systematically delays in its payments, the supplier has the right to shift it to prepayment of the goods, to demand the submission of letters of credit which guarantee the immediate (after dispatch) receipt of money for the goods. Hence here the so-called accounting money is indispensable, all the more because the incoming payments show the degree of fulfilling the product sales plan, and the wages and economic incentive fund depend upon this.

A negation of the monetary nature of noncash circulation leads to the ignoring of a number of problems which are raised by management practices. In particular, not enough consideration is given to the significance of practical measures which prevent the more rapid increase in noncash circulation in comparison with the growth rate of gross social product and national income.³ This leads to the formation of means of payment at the enterprises and organizations exceeding their planned needs. Of course, this does not influence wholesale and retail prices. They are set on a planned basis, and the surplus means of payment in noncash circulation do not effect directly the level of these prices. However, the proportions between the means of payment and material goods can be violated when the value of the latter does not correspond to the total means of payment. This has a negative

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effect upon the organization of economic processes. If such a situation is not normalized, by reducing the amount of the means of payment in aggregate circulation, then a certain pressure on wholesale prices arises. The surplus means in noncash circulation leads to a weakening of economic accountability and financial discipline.

In examining the questions of noncash circulation, it is essential to see the "primacy" of the movement of commodities in relation to the noncash or clearance payments. Behind the bank entry stand the economic and credit relations of a socialist society. A bank entry is a credit operation, for it is carried out for accounts opened as a result of the occurrence of credit obligations or debts. A bank entry is one of the forms of money functioning in our economy. The two forms or spheres (cash and noncash) of the single monetary circulation serve the single process of socialist expanded reproduction and the movement of the value of aggregate social product. The movement of value objectively presupposes the use of tokens of value such as money (cash and noncash) in socialist monetary circulation. This determines the timeliness of the planning and regulation of noncash monetary circulation. In 1975, the noncash monetary circulation of the USSR, according to the payment data, exceeded 2 trillion rubles, and increased by more than 2-fold in comparison with 1965, and by almost 40 percent in comparison with 1970. In 1976, it reached 2.13 billion rubles, or was 44 percent greater than in 1970. The decisive factor in its increase is the development of production and circulation of social product. The state and development of noncash monetary circulation, in turn, influences the processes which occur in the national economy. All of this necessitates the planning of noncash monetary circulation, the broad use of computer centers in this, and the employment of advanced accounting equipment.

Naturally the planning of noncash monetary circulation, like cash circulation, should be carried out considering the action of the laws of monetary circulation, and the main one is the law of the quantity of actual money required for circulation. However, this law, in our opinion, in influencing noncash circulation, cannot be completely manifested in it as it is manifested in cash circulation. This is explained by the specific nature of noncash circulation and by the functioning in it of money in the form of credit entries and by their servicing of the payments of the state as well as social and kolkhoz-cooperative enterprises and organizations. Money in this circulation does not go beyond the limits of the credit system and circulates in the accounts in carrying out the distribution plans and supplying goods and services. If certain associations or enterprises develop surplus means of payments, this is deposited in their bank accounts.

In speaking of the laws of monetary circulation, it is essential to consider the relationship of cash and noncash monetary circulation, and the possibility of the appearance of cash in circulation as a result of credit entries on the bank accounts. For this reason it is important in the process of planning and fulfilling the plans to prevent the formation of

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surplus means of payment, as they intensify the pressure on cash circulation and facilitate the transfer of money from a noncash form into a cash one. Consideration of the law of the amount of money needed for circulation in planning noncash circulation sets firm limits for its growth, and weakens its influence on the amount of money in cash circulation.

The organization of the Soviet monetary system is closely related to the state currency monopoly. The latter arose with the formation of the socialist state which took control over all monetary and gold reserves, it monopolized foreign trade and concentrated international payments in the State Bank. By the state currency monopoly one understands the concentration of the foreign exchange holdings in the appropriate bodies, and this provides only the state with the exclusive right of organizing and carrying out international payments and other operations in foreign currencies, and to carry out operations with gold, platinum and other valuables. The concentration of foreign exchange earnings in the bodies of the Soviet banking system has made it possible to eliminate the circulation of foreign currency inside the nation. The effectiveness of such a state monopoly has been tested out over the decades.

The Soviet monetary system also differs in the fact that Soviet money circulates only within the nation. The importing or exporting of Soviet money is prohibited.⁹ In this manner the state currency monopoly and the organization of monetary circulation whereby the national currency can circulate only within the country protect the Soviet monetary system against the constant monetary disturbances in the capitalist states. This is an important advantage.

Under the conditions of the broadening of international economic ties, ever greater attention is being given to the question of the convertibility of the Soviet ruble. The Soviet ruble meets those requirements which are made upon national currencies from the standpoint of their convertibility into other currencies, as it is based upon a dynamic national economy which holds one of the leading places in world industrial and agricultural production. The foreign economic circulation of the country is growing, monetary circulation within it is stable, prices for commodities are stable, the budget is deficit-free, the nation is a gold producer, and so forth. However the approach to the question of the convertibility of the ruble should be differentiated. A distinction should be drawn between the currencies of the capitalist states and the currencies of the socialist countries. In terms of the capitalist currencies, it is completely wrong to raise such a question. The convertibility of the ruble in the given aspect is incompatible with the planned management of the economy and the planned organization and functioning of monetary circulation. In addition this contradicts the state currency monopoly.

The convertibility of a currency presupposes the possibility of the free exchange of it for another currency and the goods of another country. If such convertibility of the ruble is introduced for the currencies of the

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capitalist countries, then the ruble will fall into capitalist monetary markets and will be subjected to spontaneous processes. Its purchasing power will depend upon a change in the prices for goods on the capitalist market and upon the inflationary phenomena inherent to capitalism. The necessity will arise of creating a special reserve of foreign exchange or gold in the Soviet credit system for maintaining the ruble exchange rate. Here the main thing is that the production and distribution of goods in our country are determined by a plan and the sale of any production and technical articles or consumer goods (even with a high demand for them on the world market) to another country, if this is not envisaged by the plan, would be a violation of it. For this reason the convertibility of the currency and the free movement of the ruble on the money markets of the West would lead only to a disruption of the planning system and cause harm to our economy.

Certain Western experts feel that it would be advantageous for the USSR to create a ruble which would be convertible only for financial operations, in maintaining in force its nonconvertibility into goods. In their opinion, the ruble could become a sort of shelter against devaluation in the Western countries, it would gain from these devaluations, it would create additional means of payment for our country, and so forth. However all of this is nothing in comparison with the negative consequences which the convertibility of the ruble into capitalist currencies would involve, as this would mean the undermining of the state currency monopoly, and the opening of a possibility for the capitalist economy to influence the proportions of the socialist economy and the monetary circulation of our nation.

The question is different with the convertibility of the ruble into the currencies of the CEMA members. This convertibility has become a real fact, although at times it is called partial. This consists in the fact that by agreement between our nation and these countries, Soviet citizens traveling in them have the right within certain limits to exchange rubles for the national currency of the other country. (The same situation operates for the citizens of the CEMA countries visiting our country.) But the main thing is that in practical terms there is no question of exchanging the ruble for the currencies of the socialist countries for foreign trade and other payments. Such payments are carried out in the transferable rubles between the International Bank for Economic Cooperation (MBES) as well as through the International Investment Bank (MIB).

Certain economists feel that the absence of the capacity for our national currency to circulate on an international scale impedes a definition of the effective functioning of the economy, as it is impossible to compare the national values of goods. These arguments are scarcely valid. The question is that an evaluation of the efficiency of social production is based upon the dominant form of the ownership of the means of production, and for this reason the approach to determining this cannot be similar in the socialist and capitalist countries. A socialist society has its own criteria of efficiency inherent to it. At the same time the currencies of the

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capitalist nations are in such a state and are subject to such fluctuations that they cannot serve as any stable measure for comparison.

Of great significance for raising the efficiency of social production, as L. I. Brezhnev stressed in his speech at the ceremony devoted to the presentation of the Order of Lenin and the Gold Star medal to the hero city of Minsk, "is the greatest possible strengthening of thriftiness and saving, the reinforcing of economic accountability in all units, and above all the strict observance of planning discipline." The solving of these problems presupposes a more active use of money.

In reviewing the role of money under socialism, it is important to consider the limitations, in comparison with capitalism, in the scale of using money under the conditions of the dominance of socialist ownership of the means of production. Although the means of production are manufactured as commodities, they possess a value and consumer value, they do not have free circulation and individuals cannot acquire them. The labor force, the factories, plants, the land and spiritual values which are a subject of purchase and sale under capitalism are not commodities and cannot be taken out of commodity circulation. The functioning of the public consumption funds provides for the allocating of a number of services by need. These are free education (higher, secondary and special), free treatment, and so forth. The planned management of the economy, including the planned regulation of wholesale and retail prices for commodities, ensures stable prices for the basic consumption products (in a number of instances below their cost). The wage rates and salaries are also set on a planned basis.

At the same time money remains a universal commodity equivalent (of a particular sort), and hence a means which encourages a growth of the efficiency of social production and labor productivity, for wages are paid according to the quantity and quality of labor. And in this sense it is essential to have the fuller use of money (considering its new content and all the functions inherent to it), and to strengthen the impact of money on accelerating the processes of intensifying production and improving the quality of work.

The necessity of increasing the role of money as a measure of value is also caused by the fact that a rise in production efficiency and its intensification necessitate a stronger control over the measure of labor and the measure of consumption. Ensuring a precise coinciding of expenditures and product output is an important condition for improving economy. And the strengthening of the connection between wages and the results achieved due to a rise in the productive force of labor helps to strengthen the effect of money on the growth of labor productivity and the intensification of production.

A rise in the role of money as a measure of value is also related to improving the level of planning, and in particular the planning of the monetary income and expenditures of the population. In this regard obviously

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it is essential in a centralized procedure to more fully determine the wage fund and ensure the precise fulfillment of the corresponding plan indicators. The actual exceeding of the planning quotas for monetary income can have a negative effect on ensuring the previously balanced solvent demand of the population for goods and paid services. A broadening of the output of consumer goods and the overfulfillment of the plans for their production and the providing of paid services help to raise the role of money in encouraging economic development.

Money plays an active role in material incentives. As is known, bonuses are used to encourage collectives and individual workers to fulfill and overfulfill the plan quotas. With the underfulfillment of plan quotas by the enterprises, money has a much less effect on the results of their operations. In these instances the role of money has a means of controlling the measure of labor and the measure of consumption is weakened. The problem is that the enterprises which do not fulfill the plan quotas pay both wages and bonuses to the employees. The use of money for encouraging the efficiency of social production presupposes a corresponding increase in the paying out of money for the fulfillment and overfulfillment of plan indicators, and on the contrary, a reduction in payments if the corresponding indicators have not been achieved. Such a procedure should involve not merely the bonuses. In our opinion, wages calculated for the organizers and leaders of production, proceeding from the existing salaries, should be paid fully only with the fulfillment of the plan quotas by the enterprise or association as a whole for the quantitative and qualitative indicators. The nonfulfillment of the plan due to factors dependent upon the economic body should tell on the amount of wages paid to the designated workers. This should be actually earned. The influencing of an improvement in work results must be sought not only by bonuses (they comprise far from the basic share of earnings) but rather through all of wages.

In our view it is advisable to consider the bonuses in the existing level of the wage rate, that is, to increase it by the average amount of the bonus, and stop paying bonuses for the fulfillment of the plan quotas and output norms by each individual worker. It is essential to rely more on Lenin's instructions on bonuses for labor heroism, and to pay bonuses for the early achieving of the end results of operations by the entire collective and for the overfulfillment of the indicators for raising production efficiency. With such an approach the dependence of wages upon the labor contributions of the employees will be increased. The role of money in encouraging production will be strengthened.

In the function of a means of circulation, money directly opposes the commodity and mediates its movement. The larger the amount of commodities in relation to the amount of money in circulation, the more fully the given function is disclosed. Here there is an important control role of money related to the conversion of C--M--C.

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As is known, under capitalism the break in the stages of converting the commodity into money leads to economic crises. The situation is different under socialism. Under the conditions of a balanced supply and demand, a certain disruption or slowing down of this conversion can show either an insufficient quantity or an unsatisfactory quality of individual goods and a surplus supply of commodities in the given region. In these instances a "signal" is received on violations committed, and this affirms the necessity of taking the appropriate measures by the planning, financial and banking bodies. In the sphere of trade, such disturbances require a strengthening of control over the assortment and quality of the goods received from industry and a correct allocating of the mass of goods to the republics and oblasts.

A rise in the role of money as a means of payment also is of great significance. Money acts in this function in the repayment of various obligations and above all in paying for goods and services in noncash circulation.

Certain economists assert that the payment for goods and services means the recognition by society of the labor spent on them. In our opinion, this conclusion is wrong, as it contradicts the generally accepted theoretical notion of directly social labor under socialism, it underestimates the role of the state plan for economic and social development, and exaggerates the importance of money as a means of payment.

The direct social nature of labor under socialism is determined by the action of the law of planned, proportional development and by the planned management of the national economy. All types of products produced by society are included in the plans of the various economic levels. Here they proceed from the necessity of a balancing of the production and consumption of each product. The product output and distribution plans are concretized in economic contracts for the delivery of goods and the providing of services. The products are produced and delivered in the quantities stipulated in the plans, and should meet definite quality parameters. The recognition of this fact by society is affirmed by the active payment carried out by the purchaser to the supplier after he has made certain that the given batch of goods (as a rule, on the basis of the commodity and payment documents) meets the contractual conditions.

Thus, the functioning of money as a means of payment makes it possible to exercise control over the conformity of goods and services to the requirements of the plan and the delivery contract. The payment affirms the satisfying of these demands. For this reason the greater the opportunities for the economic bodies to control the fulfillment of reciprocal obligations, and hence to influence one another in the interests of their fullest implementation, the more efficiently money is used as a means of payment, and the more substantial its influence as one of the instruments for controlling the quality of work of the enterprises and associations.

Recently there has been an active discussion of the questions related to the functioning of money as a means of accumulation. In particular, great

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attention has been given to encouraging the credit form of accumulation for the enterprises using interest.

As is known, the state enterprises and organizations keep their free money on accounts at the banking institutions, however they do not receive payment for this. They pay interest to the bank for loans. Certain economists have used this circumstance as an argument for favoring the payment of interest for the funds of enterprises and organizations kept in banks. It is also asserted that such a procedure would help to strengthen economic accountability.

We cannot agree with such conclusions, for, in our view, it is wrong to base all economic relationships on the principle of payment, as this also leads to the creation of surplus monetary flows in the economy. And if the proposed procedure were instituted, the bank would have to make all its services paid and not just the granting of credit. This would involve the collecting of funds under demands for payment, the issuing of letters of credit, the transferral of funds by payment authorization, the clearing of accounts, and so forth.

In the opinion of other economists, the interest paid on the deposits of citizens could be eliminated. They feel that there is nowhere else to put the money except for savings banks and a bank and there are no other credit institutions. However, such arguments do not sufficiently consider that the deposits of the public comprise a significant portion of the bank resources. The paying of interest on the deposits makes it possible to more fully accumulate the personal savings of the public in the state credit system. The question should not be the elimination of interest on deposits, but rather to utilize most efficiently the funds of the public in the form of bank loans in economic circulation. This will make it possible not only to cover the interest, but will also help to raise social production and its efficiency.

The long-range policy of the CPSU of improving efficiency and quality requires an improvement in all economic levers and incentives. The fuller utilization of the advantages of Soviet money and the monetary system is an important factor for intensifying social production.

FOOTNOTES

1. See V. I. Lenin, "Poln. Sobr. Soch." [Complete Collected Works], Vol 36, pp 134, 135.
2. K. Marx and F. Engels, "Soch." [Works], Vol 46, Part 1, p 87.
3. "KPSS v Rezolyutsiyakh i Resheniyakh S"yezdov, Konferentsiy i Plenumov TsK" [The CPSU in Resolutions and Decisions of Congresses, Conferences and Central Committee Plenums], Part I, Gospolitizdat, 1970, p 614.

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4. K. Marx and F. Engels, "Soch.," Vol 25, Part II, p 62.
5. Ibid., p 61.
6. See E. Andres, "Osnovy Teoriy Deneg Sotsialisticheskogo Obshchestva" [Principles of Monetary Theory in a Socialist Society], Izdatel'stvo Mysl', 1975, pp 194, 198-199.
7. We would note, incidentally, that on page 9 of the cited work the author asserts something to the contrary, namely: "Commodity circulation is carried out by money. Without monetary circulation commodity circulation does not and cannot exist."
8. The reason for this, as a rule, is the rapid development of credit, the broadening of the range of credited projects, and the easing up of conditions for receiving bank loans.
9. An exception is the CEMA countries which will be dealt with below.

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PRODUCTION AND IMPROVING TERRITORIAL ORGANIZATION

Moscow IZVESTIYA AKADEMII NAUK SSSR. SERIYA GEOGRAFICHESKAYA in Russian
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[Article by N. N. Kazanskiy: "Production Intensification and the Problem of Improving the Territorial Organization of the Productive Forces"]

[Text] The author shows that the improvement of the territorial organization of the country's productive forces will increase the intensification and effectiveness of production and advances a number of practical and theoretical problems which must be resolved by the joint efforts of planners and scientists (economic geographers and economists specializing in the siting of production facilities).

The construction of developed socialist society in the USSR marks our country's entry into a new stage of socioeconomic development. The 24th and 25th CPSU congresses articulated the party's economic strategy which outlined the socioeconomic goals of our society and the means required to reach them. The principal long-range goal of the party's economic policy is to secure the continuous rise of the living standard and cultural level of the people. In the process of compilation of long-range national economic plans, this goal is concretized in both economic and social programs for our society's development.

"In order to resolve the broad spectrum of economic and social problems confronting the nation, it is absolutely essential to increase labor productivity rapidly and to secure a sharp increase in the effectiveness of all social production. Emphasis on effectiveness," stated Comrade L. I. Brezhnev at the 25th CPSU Congress, "is the most important component part of our economic strategy." The transition to intensive methods of management is determined by the striving to use all accessible additional reserves to accelerate economic development in order to resolve social problems.

In earlier stages of our country's socioeconomic development, planning was primarily oriented toward the creation of the foundations of a socialist economy. The major problems in the territorial organization of the economy were: national industrialization, the electrification and chemicalization

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of the national economy, the collectivization of agriculture, the invigoration of the economies of the national hinterlands, the economic development of the resources of the eastern regions, the formation of a system of cities, and the development of major transportation arteries. Planners of our economic development gave preference to the construction of new enterprises. Traditional methods were used to substantiate the siting of these enterprises and essentially involved the analysis of various factors that influenced the citing of a given production facility.

The 25th Congress and especially the December Plenum of the CC CPSU (1977) stressed the importance of restructuring all our work in the direction of focusing attention on intensive techniques of economic development. The urgency of such restructuring stems from the new stage of the country's economic and social development. The features of this stage must be carefully considered in the territorial organization of labor particularly in view of the fact that each feature has an important territorial aspect.

The most important aspect is the new demographic situation in the country. Its characteristic traits are: the lowering of the growth rate of labor resources in the next three quinquennia and the markedly territorial unevenness of this growth. The growth of labor resources throughout the nation will be significantly lower in the Eleventh Five-Year Plan compared with the preceding five-year periods and will be still lower in the Twelfth Five-Year Plan. Six union republics -- Kazakhstan, Azerbaydzhan and the Central Asian republics, where less than one-fifth of the country's population lives -- will account for one-third of the total increase in labor resources. The reproduction of labor resources is diminishing sharply in many western regions. At the same time, a number of industrial centers in these regions are even now experiencing a shortage of labor power.

For example, at many industrial enterprises in Leningrad the number of workplaces exceeds the total projected work force by 2-2.5 percent. This has adverse consequences for the development of the city: less effective use of fixed capital and equipment, higher personnel turnover, the need to bring in outside labor power, and the deterioration of the housing problem. At the same time, approximately one-third of the workers at the city's enterprises are performing low-skill jobs. Indeed, approximately 40 percent of the workers [rabochiye] throughout the nation are performing unmechanized labor. Therefore, a sharp reduction in the share of manual labor and the automation of production become a most important condition to further economic growth.

As shown by the positive experience of many Leningrad enterprises (Leningrad Svetlana Optical and Mechanical Association, Metals Plant, etc.), this can be realized in the process of technical reconstruction of enterprises and organization of production associations that create conditions for the concentration of production and the intensification of specialization of enterprises and shops belonging to the association. This path promises an important end result: the increased effectiveness of production and higher labor productivity without increasing the size of the work force.

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The ever increasing requirement for fuel and raw materials is another factor that necessitates the intensification of production. Our country now ranks first in the world in the production of many types of raw materials (coal and oil, pig iron and steel, timber, cement and prefabricated reinforced concrete components, etc.). The use of new sources of raw materials requires ever increasing expenditures since it is necessary to develop these sources in remote northern and eastern regions of the nation.

At the same time, there is waste in the utilization of resources. This is because many of our machine tools, railroad cars, and other machines are still heavier per unit of capacity than the best foreign models. Another factor is the large quantity of waste at machine building plants, in nonferrous and ferrous metallurgy, in the timber and wood processing industry, and in other branches of the national economy. This waste forms as a rule in raw material regions that are unevenly developed.

The extractive branches of industry require higher inputs of live labor and capital investment per unit of output than are required by the manufacturing branches. Consequently, in order to prevent the excessive increase in capital investments, we must strive to secure the more rational use of resources by reducing the material-intensiveness of production, by using less expensive materials, by improving product quality and thereby prolonging service life.

The intensification of production acquires special importance in connection with the fact that the country's economic complex functions over a vast territory and by virtue of the nation's economic geography entails costly types of land transportation. Transportation today accounts for more than 10 percent of the capital investments. Despite this fact, the country's transportation system is strained. Consequently, in the future there will be a need for considerable additional capital investments in the development of the rail network, in rolling stock, in traction devices, in communications, and in material-technical supply.

Finally, there will be an increase in the share of capital investments allocated for environmental protection. Eleven billion rubles have already been allocated for this purpose under the current five-year plan. In the industrially developed regions and in the major cities, pollution and other environmental impacts acquire an increasingly urgent character. Accordingly, in the future there will be a need for large-scale efforts to eliminate the harmful consequences of many technological processes in production and transport which have a negative impact on people's lives and their mode of settlement. Funds for these purposes must be sought first and foremost from the increased effectiveness of production.

A positive solution to the production intensification problems posed by the 25th CPSU Congress cannot be attained without a new approach to the territorial organization of the nation's economy. The factor approach in preplanning research and in planning becomes clearly insufficient by itself. We must apply a comprehensive approach to the development of territorial production systems in order to ensure the rationalization of the territorial division of labor and to increase the social productivity of labor.

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"The struggle for effectiveness and quality," L. I. Brezhnev emphasized in his speech at the 18th Komsomol Congress, "...is not a temporary campaign. It is the party's policy which has been adopted in earnest and for a long time to come." He continued: "...effectiveness and quality are very broad concepts. They incorporate such basic elements as the most rational deployment of the productive forces, the improvement of state planning, and the comprehensive approach to the solution of major economic problems."

Characteristically, the question of the most rational deployment of the productive forces is advanced to the forefront. In past discussions of the problem of effectiveness, scientific and technical progress was more frequently cited as the principal means of increasing the social productivity of labor. However, in our vast country new technologies and production techniques cannot be developed in isolation from the concrete conditions of their operation in various regions and without regard to the territorial organization of the economy. Only a comprehensive approach to the rationalization of the siting of production and to scientific and technical progress can ensure the attainment of the goal of increasing the effectiveness of our economic system.

The November Plenum of the CC CPSU (1978) emphasized anew the importance of stepping up the struggle to increase the effectiveness of social production and to improve the quality of the work at all levels of production and management. "Now we are more and more acutely aware of the need," L. I. Brezhnev observed, "for the in-depth, all-round analysis of the main problems in the development of the national economy with an eye to increasing its effectiveness further." The resolution of the Plenum notes that "...special attention must be devoted to raising the productivity of labor, to incorporate the attainments of science and progressive know-how in production..., to bringing existing reserves and potential into play in order to increase production and to raise the technical level of production at minimal cost."

From the foregoing it can be concluded that the mobilization of reserves for increasing the effectiveness of the organization of the country's unified economic complex has been advanced to the forefront of scientific and planning work.

In connection with the task of improving the territorial organization of the productive forces with due regard to the existing economic situation in our country, several groups of problems can be advanced for the long run.

The first group is associated with the improvement of the structure of regional production complexes that exist in the European part of the nation. The comprehensive approach to the substantiation of paths of economic and social development of this territory presupposes the solution of questions relating to the improvement of the territorial organization of the economy in the following directions:

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- (1) the technical reconstruction of existing enterprises thereby increasing the degree of mechanization and automation of labor processes designed to economize on labor resources in every way up to and including their separation in order to solve problems in other parts of the country;
- (2) completion of the creation of branch territorial production associations coupled with the establishment of effective relationships between head enterprises and their affiliates;
- (3) the establishment of mutually advantageous relationships between enterprises in various branches of the economy in territorial production systems with regard to the fabrication of general consumer goods, the comprehensive use of raw materials and production waste, and the execution of unified environmental protection measures;
- (4) the strict limitation of the development of fuel-intensive and energy-intensive production facilities;
- (5) the more active prospecting and development of local fuel-energy resources, the completion of the creation of the Orenburg and Timano-Pechorskiy territorial production complexes; and the implementation of a program for the development of atomic energy;
- (6) the realization of the program for the development of agriculture in the Nonchernozem Zone and its transformation into a reliable base of intensive agricultural production;
- (7) the improvement of the water supply system of major cities (especially cities situated in southern regions) and the rechanneling of part of the runoff from northern rivers into the Volga and Dnepr basins.

The second group of problems involves the detection and utilization of the reserves underlying the economic development of Siberia and the Far East. The objective need to intensify the economic development of these regions of the nation is associated with sharp differences in the forecast availability of fuel-energy and other raw material resources in these regions compared with regions situated in the European part of the country.

The economic development of Siberia and the Far East is an objective pattern of the territorial organization of the productive forces of the Soviet Union. The realization of this program in the planning process ensures the necessary increase in the economic might of our country, which cannot be realized in other parts of the nation. The problems that arise in the process go beyond the RSFSR. These problems are of national importance. In the long run, their solution may have a significant influence on the international division of labor. Even now, other socialist countries and a number of industrially developed capitalist countries are displaying interest in developing many types of resources in these regions. All union republics are broadly participating in the solution of these problems and many socialist countries are also taking part in the design and construction

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of various projects. In the long run, it is planned to attract investments from developed capitalist countries coupled with the subsequent delivery of requisite raw materials and semifabricates.

In Siberia and the Far East, it is very important to use the comprehensive approach in the substantiation and planning of measures relating to the economic development of various territories thereby ensuring the rational organization of the interaction of the economically developed southern zone with uninhabited regions located to the north. At the same time, we must compare different variants of territorial localization of production facilities that use newly developed raw materials and fuel in the interests of finding effective solutions to their localization and utilization.

The degree of utilization of local resources acquires great importance. The relative costliness and complexity of the task of supplying the western regions of the nation with ever larger masses of raw materials and fuel from the east emphasize the urgency of the quest to transform local raw materials into more transportable types of semifabricates and finished products. In this regard, we must comprehensively develop the regions of Siberia and the Far East and secure the planned formation of new territorial production complexes (TPC) -- the Ob'-Irtyskiy complexes of Western Siberia, the Central Krasnoyarskiy (Kansko-Achinskiy), Sayanskiy, Nizhneangarskiy, Bratsko-Ust'-Ilimskiy, Yuzhnoyakiutskiy, and other TPCs. In the preplanning stage, we must substantiate the composition of TPCs from enterprises of specialized branches, enterprises and production facilities that use waste and raw-material by-products and from the most important facilities in the production and social infrastructure. The attraction of significant labor resources to these regions and the retention of cadres in new places require the resolution of a number of social problems that are directed toward the creation of better living conditions that exist in the inhabited regions of the nation from which the settlers come.

The third group of problems involves the use of the ever increasing labor resources of Kazakhstan and Central Asia, the expansion of agro-industrial production cycles in these regions, and the formation of new TPCs based on known combinations of fuel, energy and raw material resources: Southern Tadzhik, Pavlodar-Ekibastuzskiy, Mangyshlanskiy, Karatau-Dzhambul'skiy, etc. There are also many undeveloped, sparsely inhabited, drought-ridden territories in this area. Their economic development requires the resolution of the water problem. The results of work on the Irtys-Karaganda Canal are presently being analyzed and the possibility of rechanneling some of the runoff from the Ob' River to these regions is under investigation. This is a complex and costly technical problem.

Social problems associated with attracting local residents to various types of industrial activity and to increasing the migratory activity of the indigenous population are of great importance. In this regard, we must give careful consideration to the development and distribution of a system of vocational-technical schools in these republics for training skilled workers and to train more specialists from these republics in industrial centers in nearby oblasts in the RSFSR.

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The fourth group of problems relating to the improvement of the territorial organization of the productive forces is associated with the rationalization of economic and transportation relations and the formation of a unified national transportation network. Our country is unique for the magnitude of its internal freight turnover and especially for its overland transportation. Its total freight turnover is in excess of six trillion ton-kilometers a year and a further increase in this volume is projected for the future. The growth of freight traffic from east to west will be particularly rapid. The volume of fuel shipments alone from east to west doubles roughly every five years. In 1975, this volume comprised 350 million tons of standard fuel. Estimates indicate that east-to-west fuel shipments will eventually pass the trillion ton mark. The movement of such a mass of cargo over considerable distances presents a difficult transportation problem than cannot be solved by existing modes of transportation. We must find more progressive engineering solutions to reduce the cost of transporting fuel (the use of multiple layers of pipes in gas lines, the use of compressed air to transport containers through pipelines, etc.). It is important that the solution of this problem be linked to the rationalization of the siting of the productive forces.

Earlier studies have shown that between seven and 10 percent of total freight shipments are irrational (Chertkov, et al, 1972; Khachaturov, 1959). In recent times, planners have been devising measures to reduce the volume of irrational shipping. Gosplan SSSR [USSR State Planning Committee] sets targets for the elimination of irrational shipments in its one-year and five-year plans for the economic and social development of the nation. However, these targets primarily concentrate on the proper supplier-consumer matchup. However, too little attention is devoted to important ways of improving transport relations, e. g., the rationalization of the economic structure of economic regions and of territorial production complexes and to modifying the product specialization of plants in this regard. A long-range, integrated approach is required for a positive investigation of these points.

There is also room for improving the structure of the transportation system proper through the development of major transportation arteries, through the development of new lines that increase the maneuverability of the transportation system, and through the improvement of the quality of the system of roads at the local level.

Mention should be made of two more problems that are directly associated with the improvement of the territorial organization of the productive forces. First, the planned regulation of urban development (especially in the case of large cities) and the development of a unified, planned system of settlement. This program involves the rational use of the main productive force of socialist society: man. With the beginning of industrialization, widespread urbanization generated far-reaching migratory processes in our country. These processes ultimately hinged on the concentration of production and consequently on jobs. At the same time, objects of the social infrastructure -- housing, polyclinics, hospitals, culture centers, etc. -- were to a considerable degree built at the expense

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of developing production. The time has come to pursue a more flexible policy of purposeful, planned management of these processes in order to secure the integrated economic and social development of various territories in the nation. Of late it has become a common practice to restrict the growth of the urbanizing [gradoobrazuiushchiy] base of the largest cities (Moscow, Leningrad, etc.), to encourage the siting of industrial production in small and medium-size towns, and to enlarge rural populated points.

However there are still many unresolved problems. We refer to the elaboration of typological systems of settlement for various parts of the country, prospects for the development of small towns, the nature of development [zastroyka] of rural populated points, etc. The resolution of these problems must be closely linked to the rationalization of the territorial organization of production under the specific conditions of a given economic region.

Second, the problem of increasing the effectiveness of the Soviet Union's participation in the international division of labor. Here it is of utmost importance to develop socialist integration with due regard to its positive impact on improving the economic structure of economic regions of the USSR. Another urgent question is to increase the effectiveness of USSR foreign trade relations with capitalist and the developing countries. It is particularly important to foster the tendency to reduce the share of raw materials and to increase the share of manufactured goods in transactions involving outside investment.

In planning practice regarding these problems, we should first and foremost note the increased emphasis on the long-range approach to the adoption of decisions in the realm of economic planning. Of late, an interconnected system of basic, long-term directions, medium-term (five-year) and short-term (one-year) plans has taken root in planning practice.

It is now a common practice to conduct preplanning studies to substantiate the economic and social development of our country for the long haul. Participants in these studies include large collectives of branch scientific research and project-planning institutes of ministries and agencies and research-project-planning organizations of an interbranch character within the system of the nation's planning agencies: Gosplan SSSR, republic planning agencies, and Gosstroy SSSR [State Committee for Construction Affairs].

The development and siting of production are two aspects of one and the same process of social reproduction. Branch planning makes it possible to enjoy the advantages of the specialization and concentration of production and to pursue a uniform technical policy at enterprises throughout a branch. However, the high degree of differentiation between various branches of production makes relations between enterprises and associations increasingly complex: at the present time, these relations are planned and managed by over 150 different ministries and agencies. What is more, each agency plans the development of its subordinate facilities on a nationwide basis. In this regard, it becomes increasingly important to provide economic substantiation for the development of various enterprises under the specific conditions of various regions and to make provision for the rational supplying of them with raw materials, fuel and electric power and for

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the effective shipment of the finished product. In other words, we need a comprehensive evaluation of the economic performance of enterprises in various branches in the territorial system of production of a given region.

In preplanning work these purposes are served by plans for the development and siting of branches of production, which are drawn up by ministries and agencies for long-term periods of development (15 years). However, no matter how well substantiated a branch plan may be, it in itself cannot guarantee optimal decisions unless it is accompanied by projections of other branch systems for specific regions of the nation, by evaluations of prospective territorial combinations of various production enterprises. In connection therewith, the compilation of branch plans is concurrent with the elaboration of long-range plans for the development and deployment of the productive forces of economic regions of the USSR and union republics.

Analysis of the projected, long-range territorial structure of production of economic regions will facilitate the mobilization of additional reserves for increasing the effectiveness of territorial production combinations as a result of the technological and economic interconditionality of production processes in regional economic systems, the comprehensive use of raw materials and the economical expenditure of water, heat, and electric power; the economical utilization of transport communications, etc.; the utilization of the effect of interbranch cooperation between enterprises in a given region; the rationalization of economic and transport relations; the reduction of transportation costs; and the comprehensive utilization of labor resources and of the potential of the construction industry. The significance of branch and territorial plans increased in particular after the 28 May 1969 decree of the CC CPSU and the USSR Council of Ministers which stipulated that decisions on the planning and construction of enterprises and installations must be based on these plans.

The coordination of branch and territorial plans and the general organizational and methodological guidance of this coordination effort are the responsibility of the Council for the Study of the Productive Forces under Gosplan SSSR. The plans are coordinated in the process of compilation of the Master Plan of Deployment of the Productive Forces of the USSR. This complex project usually draws upon the efforts of a large number of research and project-planning organizations (over 500) which conduct pertinent research simultaneously according to a uniform set of methods. To date master plans have been compiled for 1971-1980 and 1976-1990. As preplanning research documents, the master plans have played a definite part in improving the siting of production and especially in the siting of industrial production. The experience derived from this important work has been summarized in many recent publications (Nekrasov, 1978; Probst, 1971).

The effectiveness of the proposals set forth in the master plans depends in large measure on the nature of the organization of the stage-by-stage drafting of proposals on improving the economic structure of territorial production systems and the rationalization of the siting of branches of

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production. Proposals on the siting of enterprises and production facilities contained in branch plans make it possible to compile a basic variant of the territorial organization of the productive forces which is to be optimized as the work progresses. In this regard, it is extremely important to improve the techniques used to increase the economic substantiation of the proposed solutions: These improvements include: defining the system of economic regions and economic subregions more precisely, expanding the use of the balance method in technical and economic calculations based on territorial production systems, rationalizing economic and transportation relations, substantiating the projected formation of new TPCs, employing models of territorial production systems, devising long-range comprehensive territorial programs, etc.

The program-goal method of planning is being used more broadly in the compilation of plans. This method essentially concentrates effort and resources on the most important economic and social development programs that bring about major structural change in our economy. Thus, for example, a long-range program of agricultural development (including a territorial program for the development of the Nonchernozem Zone) was devised in the course of the implementation of the resolution of the March (1965) Plenum of the CC CPSU. A comprehensive program for the development of the socialist economic integration of CEMA member nations was devised and is being successfully implemented.

The long-range plan for the Tenth Five-Year Plan was elaborated concurrently with the articulation of the basic principles of the nation's economic and social development up to the year 1990. At that time, institutions belonging to the country's academies of sciences drafted the Comprehensive Program of Scientific and Technical Progress and Its Socioeconomic Consequences for 1976-1990.

The preparation of territorial programs for complexes remains an urgent problem. These programs would concentrate on resolving the main problems in the rationalization of the siting of the productive forces in the planning process. In our opinion, such programs should be developed for every newly formed TPC, for regional production complexes incorporating major structural modifications (e. g., the Ob'-Irtyskiy, Dvinsko-Pechorskiy complexes), and even for large interregional territorial formations (e. g., Siberia and the Far East).

The coordinated branch and territorial development of the socialist economy is a necessary condition to its effectiveness (Pavlenko, 1978). The problem of combining the branch and the territorial approaches in the resolution of problems relating to the territorial organization of the economy acquires more and more importance in preplanning work for the extended future and also in medium-range planning (in the substantiation of five-year plans). In many parts of the nation it has become a common practice to draft comprehensive plans for the economic and social development of smaller areas (oblasts, rayons, cities). Such planning is initiated by local party organizations that drawn upon the assistance of the public at large. Characteristic in this regard is the experience of the Leningrad party organization which has been described in the literature

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(Romanov, 1976; Complex Planning..., 1976). The experience of long-range planning for a number of regions and major cities (Krasnoyarskiy and Leningradskiy [regions], Moscow and Sverdlovsk) shows that the quest for additional reserves lies in:

- (a) the specialization and concentration of production at industrial enterprises (taking into account the organization of production associations and science-production associations);
- (b) the interbranch cooperation of production (particularly in machine building -- in the fabrication of pieces required throughout the machine building industry);
- (c) the improvement of intrabranh relations, inter alia, through the organization of head enterprises and their affiliates in production associations;
- (d) the formation of new TPCs;
- (e) the more complete stocktaking of regional features in the development of the production and social infrastructure and the utilization of the resources of various branches and agencies (on a commission basis) for the improvement of the infrastructure.

The findings are expressed in specific proposals on improving the regional structure of production: direction and magnitude of technical reconstruction of existing enterprises in order to economize labor resources; the creation of missing production links by detecting and eliminating bottlenecks; the shutting down of production facilities whose further operation is economically unfeasible; the removal of ecologically hazardous and dangerous production facilities, etc.

The scientific generalization of this practical experience is highly relevant to the development of a theory of territorial organization of the productive forces since it is based on the search for ways of securing the effective interaction of branches of the national economy and of territorial production systems, which is one of the urgent problems involved in improving the planning of the national economy.

Soviet economic science is now confronted with the important task of scientifically substantiating the rationalization of the siting of the nation's productive forces.

First of all, it is important to shift the center of gravity of economic research to the applied aspects of science that are in one way or another associated with improving the territorial organization of the economy. This is the most important point that must be understood by all economic geographers and economists concerned with the siting of the productive forces. Representatives of these divisions of Soviet science must with their very being grasp the sense of Lenin's appeal to place the treatment of territorial differences and the siting of production "on the same historical footing, not only in the sense of explaining the past, but also in the sense of a bold forecast of the future and of bold practical

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action for its attainment" ("Polnoe sobranie sochinenii" [Complete Collected Works], Vol 26, p 75).

Second, there is need for the theoretical interpretation of practical work on the territorial planning and siting of the productive forces. Many scientific collectives are directly participating in this work. Probably the most timely feature in the systematization and theoretical generalization of this research is the "integration" of the efforts of economic geographers and the research of economists specializing in the siting of the productive forces.

Finally, we should emphasize the importance of concentrating efforts on the main unresolved problems in the theory of territorial organization of the productive forces.

We refer above all to the need to improve the economic regionalization of the nation. Many scientists and nonscientists have addressed themselves to this point. A. N. Kosygin spoke on it at the 25th CPSU Congress. The problem becomes especially important in connection with the increased effort to compile long-range plans for the economic and social development of various administrative territorial-economic units (republics, oblasts, cities) as well as numerous branch plans. Both of these directions are fraught with the danger of localism and parochialism in their approach to the solution of the problem of improving the siting of the productive forces. The only solution to the problem is economic regionalization which in socialist planning practice according to G. M. Krzhizhanovskiy (1926) takes upon itself "...the protection of the positions of the economic optimum" (p 28).

However, work on the investigation of economic regionalization has not been launched. This question is entirely neglected in the elaboration of the Master Plan for the Deployment of the Productive Forces of the USSR. Territorial plans for the extended future are drafted according to the existing system of economic regions of the USSR. Many scientists and planners have repeatedly noted that such large economic regions as the Northwestern, Povolzhskiy, West Siberian, East Siberian, and Kazakhstan regions are not unified production complexes and should be broken down into smaller units. Some researchers at their own peril try to use statistical techniques (occasionally very simplistically) to prove the need to revise the existing boundaries of economic regions of the USSR (Kistanov, 1976, and others). However, the problem of economic regionalization is complex like no other problem and requires the joint effort of representatives of various sciences and schools on a common methodological basis toward the solution of the principal task of territorial planning: the rationalization of the siting of the productive forces. After all, the objective of economic regionalization is to mobilize additional reserves for increasing labor productivity by using the 'complex' effect in the production of enterprises belonging to different agencies, by rationalizing interregional and intraregional economic relations, by improving the use of labor resources, and finally, by using "wastefree" technologies of regional production complexes in close relationship with the establishment of optimal modes of natural resource utilization.

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The economic regionalization of the nation must be improved not for the sake of individual revisions in the boundary lines of the various regions but rather for the purpose of establishing an effective statewide system of large regional production complexes which in practical planning work ensure the improvement of territorial proportions, the saving of social labor, and the rationalization of the economic interaction of various parts of the country. The elaboration of the methodology for constructing such regions should be considered a very important task of the science of economic geography at the present time. The aid of representatives of allied sciences and of central and local planners should be broadly solicited in the solution of the problem.

The problem of territorial production complexes also remains unresolved. The TPC is the main direction in contemporary Soviet economic geography. It has probably been the subject of the greatest number of works published in recent years. As we know, Moscow, Kiev, Perm', Novosibirsk, Kazakhstan, and Kazan economic geographers have their own approach to the question.

A constructive idea expressed in the debate among economic geographers won wide popular support: elements of the productive forces should be territorially combined in conformity with a plan in such a way as to augment social labor productivity additionally. And N. N. Kolosovskiy was unquestionably right when he said in 1968: "The combination of regional production facilities as the law for our system."

The new Constitution of the USSR legislatively reinforced the fact that "The economy of the USSR is an integral economic complex comprising all the elements of social production, distribution, and exchange on its territory" (Article 16). It, like the constitutions of the union republics, emphasizes the need to ensure comprehensive economic and social development on the territory of republics, oblasts, and major cities (Article 76).

TPCs are a broad part of state planning practices: directive documents pose tasks that envisage "the development of existing and formation of new territorial production complexes." Practical steps are taken to organize the planning of TPCs: summary title lists of capital construction projects are compiled for individual TPCs, targets are substantiated for the formation of new TPCs in the Master Plan for the Development and Deployment of the Productive Forces, and the question of elaborating programs for the formation of new TPCs is discussed.

However, in the scientific literature there are still broadly different interpretations of the very concept of the TPC. The clear, precise definitions of N. N. Kolosovskiy are sometimes subjected to unsubstantiated stylistic treatments from various points of view. Many works devoted to TPCs employ the usual economico-geographic characterizations while such important questions as the taxonomy and structure of TPCs and their interrelationship with economic regionalization and management theory receive little attention.

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N. N. Kolosovskiy noted that "economic regionalization can be successfully elaborated in science and realized in fact only on the basis of the teaching regarding territorial production combinations of the productive forces" (1969, p 149). Numerous modern scientific works create the impression that it is dangerous to separate TPCs from economic regionalization and hence from the rationalization of the siting of the productive forces.

The use of the balance method for the rationalization of territorial proportions of production remains an unresolved question in science and in practice. And yet this is the only method that can resolve the problem of a variational approach to the modelling and optimization of the territorial-production structure of the country's integral economic complex.

Siberian economic geographers and economists specializing in the modelling of TPCs have done much useful work. This work has become renowned both at home and abroad. However, their models also primarily serve the goal of optimizing a given set of production facilities whereas the substantiation of the specific target for a region remains an open question. To be sure, the Siberians are working in this direction and, it seems to us that their approaches to the modelling of TPCs by combining point and spatial models (Granberg, 1977) can be useful in solving this important problem.

The techniques used in determining the effectiveness of TPCs are an unresolved question. This is all the more true in the present stage given the heightened role of social factors of development and economic requirements and constraints on the growth rates and structure of TPCs; in evaluating them, we cannot confine ourselves solely to their economic effectiveness.

The effective functioning of the socialist economy as an integral national economic complex presupposes the constant improvement of the territorial organization of the productive forces. A necessary condition to this is the active participation of scientists (economic geographers and economists) and the broad Soviet public in the planning and management of this process.

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